

# MONTHLY WEATHER REVIEW,

## APRIL, 1875.

---

WAR DEPARTMENT,

Office of the Chief Signal Officer,

DIVISION OF

TELEGRAMS AND REPORTS FOR THE BENEFIT OF COMMERCE AND AGRICULTURE.

### INTRODUCTORY.

The present weather review expresses the main features of the April meteorology, as deduced from the following reports and records :

Reports from 8 Stations of the United States Signal Service.

Reports from 10 Stations of the Canadian Meteorological Service.

Reports from 267 Volunteer Observers.

Reports from 1 United States Naval Hospital.

Reports from 27 United States Army Surgeons.

Records furnished by Private Observers, Marine Logs and the Press.

The most noteworthy peculiarities of the weather are as follows: (1) The extraordinary and almost universal continuation of the cold weather. (2) The frequency, lateness and destructiveness of the April frosts. (3) The lateness of the rivers and lakes in opening to navigation. (4) The unusually high range of the barometer. (5) The unusually large quantities of drift-ice and enormous icebergs off the Atlantic coasts.

### ATMOSPHERIC PRESSURE.

The graphic Chart No. II shows the average atmospheric pressure by the isobaric lines in *black*. The monthly phenomena of pressure, as indicated by the barometer, are grouped below under the heads of *Areas of High Barometer* and *Areas of Low Barometer*.

(1) *Areas of High Barometer*.—Of these, eight are noteworthy, as intimately connected with the controlling features of the month's meteorology. Some of these high barometers reached the figures 30.50 inches, and they were attended by severe cold, killing frosts and snow. They have served to make the average barometric range for April higher than the normal range, or that which is the mean of many years' observations. The following details give the time, progress and effects of the different high barometers:

*First.* A high barometer prevailed over the larger portion of the Gulf States during the first three days of April, being central on the 3d in southeastern Louisiana. It was attended by low temperature on the 1st and 2d, and by heavy rain on the 1st.

*Second.* On the 4th, another area of high pressure appeared in the Northwest and Upper Lake region, and moved southeastwardly over the Lower Lakes, the upper Ohio valley and the Middle and Eastern States, which last section it reached on the afternoon of the 5th. Its progress was marked by a decided reduction of temperature and northerly winds. This area, after spreading over all the Atlantic States on the 5th, remained nearly stationary till the afternoon of the 6th. It was then augmented by a

*Third* area of high pressure, which descended from beyond the St. Lawrence valley, with low temperature, northeasterly winds and occasional snow in New England. This area culminated off the Middle Atlantic coast on the night of the 7th.

*Fourth.* During the afternoon of the 11th, a decided rise of the barometer was reported from the Northwest, and a belt of high pressure rapidly developed west of the Mississippi, but soon disappeared except in Texas, where, in diminished intensity and extent, it continued till the 14th.

*Fifth.* An extensive area of very high barometer advanced, on the evening of the 15th, from Dakota and Montana, southeastwardly, along the Missouri valley, and, very quickly, the pressure rose everywhere west of the Mississippi river, with very cold, frost-bearing winds. This area of high barometer was one of the important features of the April weather. On the 16th, it had overrun the whole Mississippi valley and diffused its freezing temperatures as far south as Tennessee and Arkansas. On the 17th, it was accompanied by snow in the Ohio valley and Lake region, and its chilly influences were further disastrously felt on the morning of the 18th from North Carolina and Tennessee to the Lakes and New England. The injury to vegetation was very great during the 17th and 18th.

*Sixth.* On the 20th, another area of this character covered the Upper Lakes, and, thence, progressed southwardly over the Lower Lakes, the Ohio valley and the Alleghany Mountain region. But its effects were not felt so disastrously as those of its predecessor.

*Seventh and Eighth.* Areas of decidedly high pressure were formed in the Northwest on the 23d, and over the Lake region on the 26th.

(2) *Areas of Low Barometer.* Several of these depressions, especially from the 18th to the 26th, were vague, ill-defined, and irregular in their movement. Two or three of a feeble character are not capable of being charted. Ten of the most definite and decided depressions will be found on Chart No. I. Of this number, No. X is probably the most marked and important storm of the month, while No. VII is distinguished as little more than a local disturbance. A small storm-centre, attended with rain and snow, passed over Wisconsin, northeastwardly, on the 1st. But the first important storm, here designated as

No. I, appears well developed, with barometric reading 29.33, on the afternoon of the 2d of April, then central in western Dakota. It traversed only the further Northwest and the Upper Lake region, and was lost to view on the night of the 3d, north of Lake Huron. It was attended, however, with heavy snows over a belt running east and west, about 400 miles broad and 1,000 miles long, from Dakota to Lake Huron.

No. II made its first distinct appearance in the Southwest on the morning of the 4th, and its track lay nearly due northeastward through Kansas, Nebraska, Iowa and Wisconsin, passing beyond the latter State on the 6th. It occasioned a high temperature in the Mississippi valley on the 4th and 5th, and high northeast winds on Lake Superior

during the afternoon of the 5th, but the precipitation accompanying it was light. The barometer-gradients in this depression were also generally light.

No. III pursued very nearly the same track as its predecessor, except that it made a slight detour to the northwestward, after having moved from the Southwest into northern Iowa. Occupying from the afternoon of the 6th till the midnight of the 8th in reaching Lake Superior, it lingered for twenty-four hours a little north of that lake, and then passed off toward Hudson's Bay. During the midnight of the 6th, sleet and very heavy rain preceded this low barometer-area in the central Missouri valley, and the next morning the rain-area progressed in front of it from Nebraska to Wisconsin and Minnesota. The heavy rain-fall along the Missouri and its tributaries was subsequently felt in the rise of that river, reported from the 9th to the 12th of April; it was also perceptible in the increased volume of the Upper Mississippi, as reported on the 9th and 10th. Cold and high northwest winds, with sleet and snow, followed in its rear, as this depression disappeared to the northward.

No. IV also had a southwestern origin in Texas on the 10th, but it moved over more southerly parallels, in a path almost due northeast from Texas to Connecticut, trending a little north into the Ohio valley. It was attended with considerable rain-fall in the Ohio Valley and Tennessee, and with frequent but light rains in the Middle States. High easterly winds and heavy snows preceded its approach in New York and New England on the 13th.

When in the upper Ohio valley, this depression was but ill-distinguished from an extensive area of low barometer then (on the 12th) covering the entire country from Illinois and Lake Michigan to Pennsylvania, Virginia and the Carolinas. During this day, three smaller depressions were visible within the great area of low barometer—one in Illinois, one in East Tennessee, and one in Pennsylvania. By 7:35, A. M., of the 13th, there were only two of these left, one in Pennsylvania and that previously in East Tennessee, now advanced to the Virginia and Delaware sea-coasts. These remained nearly stationary till the evening of the 13th, and, at midnight of that day, are seen on the weather map as a single depression, central off Long Island. The Pennsylvania branch, the original nucleus, remained stationary in the vicinity of Pittsburgh nearly twenty-four hours.

No. V was a Lake-depression, emerging on the night of the 14th from Northern Minnesota and passing along the central line of the Lake system to the lower St. Lawrence valley, where it vanished on the 16th. It was marked by high and dangerous winds on the Lakes, and by considerable precipitation, and was followed by very low temperatures, e. g., 13° F., 14° F., 4° F., 10° F. and 6° F., in the Northwest and Upper Lake region, the temperatures ranging from 12° to 20° F., in the Lower Lake region. This intense cold was sufficient to restore for the time the rigorous conditions of winter, and milder weather did not intervene over the Lakes till the close of the 18th.

No. VI. A marine-storm, moving along the Atlantic coast on the 16th and 17th, approached Cape Hatteras apparently from the West Indies, and occasioned high and dangerous winds from that Cape to Cape May—the wind-velocity at Kittyhawk reaching forty-six miles per hour, with a heavy ocean-swell from the east. This gale was experienced by vessels off Cape Hatteras on the 17th and 18th, the gale commencing at S.W. and backing round to N. and N.N.W., with great fury, causing a heavy cross-sea, and lasting fifty-one hours. On the 19th, the S.W. wind following rose to 62 miles per hour at Kittyhawk. One vessel reports being "surrounded by whirlwinds and waterspouts, culminating in a violent gale from N.N.W., with blinding snow, so



dense that one could scarcely see the distance of three lengths of the vessel." This violent snow-storm at sea, connected with Storm-centre No. VI., is traced by other marine reports 70 miles south of Cape Henry on the 16th, 17th and 18th.

No. VII was of short duration and extent, so far as it is in the power of the office to trace it. Being, also, a feeble depression, the deficiency of pressure was restored on the night of the 19th, and the phenomenon disappears within the field of weather-observations. Its track does not appear to be more than 400 miles long.

No. VIII. This was at first a feeble disturbance, manifested in southern Louisiana, thence slowly moving northeastward to central Alabama; thence, yet more slowly, changing its course to southeast, and passing over western and northern Florida, reaching the Gulf stream, by very tardy advances, on the afternoon of the 23d near Fernandina; after which, its progress was steadily and rapidly maintained along the western margin of the great ocean-current, until, on the 25th, it vanished in the direction of Newfoundland. On Saturday afternoon, while this storm-centre was passing off Cape Henry, vessels on the Chesapeake Bay experienced one of the most severe hurricanes of the winter. The progressive velocity of the gale when off the coast exceeded at times 35 miles per hour, while its cyclonic winds occasionally reached 40 miles an hour. The rain on the seaboard, however, was not very heavy, as the centre kept well out to sea.

No. IX, commencing in the Southwest on the 26th, passed over Tennessee, North Carolina and Virginia, and was attended with heavy rains along its pathway. Otherwise it was not worthy of special note.

No. X. This was, perhaps, the most noteworthy storm of the month. Its course lay due northeast from Indian Territory to the St Lawrence valley. Its progress was very rapid, occasionally attaining or exceeding a velocity of 42 miles per hour after crossing the Mississippi river; and the cyclonic winds on the Lakes were reported as high as 60 miles an hour. The barometric gradients there were steep, and the barometer fell on Lake Erie to 29.24 inches and, probably, lower. It was accompanied by considerable, but not very heavy or protracted, rains and snows. Winds of from 40 to 50 miles velocity per hour were frequent on Lake Erie. At Erie, Pa., buildings were unroofed and local damage was reported. Thunder and zigzag lightning followed in the rear of the storm after its passage of Lake Erie.

## ATMOSPHERIC TEMPERATURE.

The collective observations of the month's temperature appear on Chart No. II, graphically by the isothermal lines in red, and more accurately by the table in the lower left-hand corner.

(1) *General range.* It is a most remarkable fact, as numerically shown by the table on Chart II, that, in every district of the United States east of the Rocky Mountains, the April temperature has been extraordinarily low. This unusual cold is most noticeable in the Middle and South Atlantic States, New England, the Lower Lake region and the Upper Mississippi valley. The only exception to this abnormal distribution of temperature is on the Pacific coast, where the range is  $2^{\circ}.6'$  above the average of many years. The temperature for the whole northern frontier, from Maine to Dakota, very nearly averages that of freezing to the end of April. The isotherms in the country

west of the Mississippi valley, notwithstanding the season, have scarcely any deflection northward. This fact shows the protractedness of the late winter. A private observer at New Bedford, Mass., gives the following as a record of the coldest winters since 1812:

	1874-5.	1871-2.	1855-6.	1835-6.
December.....	31.°20 F.	28.°40 F.	34.°20 F.	26.°40 F.
January.....	21. 60	25. 90	20. 95	28. 25
February.....	21. 73	28. 25	22. 64	22. 25
March.....	39. 17	27. 20	29. 10	32. 30
Average for January and February.....	21. 67	27. 08	21. 80	25. 25
Average for December, January and February....	24. 84	27. 52	25. 93	25. 63
Average for Dec., Jan'y, Feb'y and March.....	26. 18	27. 44	26. 72	27. 30

(2) *Destructive frosts.* The lateness of the spring, the prevalence of severe frosts and the injury to vegetation have been among the most obvious features of this month's weather. A record of April frosts, kept in Florence, Alabama, from 1849 to 1853, and from 1853 to the present year in Knoxville, Tennessee, gives the following data: April 16, 1849, at Florence, Alabama, "severe frosts, and vegetation supposed to be all killed." April 16, 1850, "disastrous frosts, which killed vegetation, and even young oak trees, from Tennessee to the Gulf." April 19, 1852, snow in the morning. April 17, 1870, at Knoxville, cold, cloudy day, with snow. April 22d and 23d, 1871, "frost at night."

April 23, 1875, frost was reported at Knoxville. At Norfolk, on the 17th, there was a heavy frost, which was reported as very disastrous to peas, strawberries and peaches. On the 18th and 19th, another heavy frost (Thermometer 27°F.) fell at Norfolk, nearly destroying the pears, plums and cherries; also ruining the early vegetables and strawberries.

At Nashville, Tennessee, on the 17th, the thermometer fell to 25.°5 F., forming ice about one-eighth of an inch thick, seriously injuring vegetation and killing many fruit trees. There was frost at Leavenworth, Kansas, on the 16th, and snow at Lynchburg, Virginia, on the 17th, and freezing weather nearly all day at the latter place on the 18th, causing great loss of all varieties of early fruits and early wheat. Frost occurred at Wytheville, Virginia, on the 22d, 23d and 24th; at Charleston, South Carolina, on the 19th, (heavy); at Aiken, South Carolina, on the 17th and 18th; at Mobile, on the 3d; heavy frost at Savannah, Georgia, on the 18th and 19th, with ice nearly half an inch thick on tranquil pools in the country. Light frost was deposited at Augusta, Georgia, and Wilsonville, Alabama, on the 17th and 19th. On the interior lakes of New York, and in the Adirondacks, it is reported ice remained two to three feet thick as late as April 15th. Frost was also reported at Brookhaven, Mississippi, on the 24th, (latest known); light frost on the 18th, at Mayport, Florida, and on the 24th, at Troy, Alabama; at St. Marks, Florida, on the 18th, and on the 19th, at Wellborn, Florida.

(3) *Temperature of the soil.* At Fallston, Maryland, water-pipes, three feet underground, frozen in the winter, were first sufficiently thawed to admit flow of water on the 3d of April. At Nichols, New York, the ground was not free from frost till the last of the month. At Kenton, Ohio, and Hector, Schuyler county, New York, frost disappeared from the soil, not till the 10th. At Fall River, Massachusetts, water-pipes frozen February 12th, remained so till after the 20th of April.

## TEMPERATURE OF WATER.

The reader will find this element given in the table on the lower right-hand corner of Chart No. II. This table presents the maximum and minimum temperatures of the water at the various lake, river and sea-coast stations, the observations being taken at the bottom.

## PRECIPITATION.

This item for April is exhibited on chart No. III, the figures giving the total amounts of rain and melted snow. The extraordinary excess of rain-fall recorded in March was not repeated in April. Still there is, generally, an excess of precipitation throughout the United States east of the Rocky Mountains. The only noteworthy exceptions to this remark are in the Ohio valley, in which the last month's rain-fall fell short of the usual quantity by more than one-half, *i. e.*, by 1.72 inches, and on the Lower Lakes, where the deficiency is an inch and a half. There was, on the contrary, a large excess (of 1.70 inches) in the South Atlantic States and an excess of about 1 inch in the Gulf States. Elsewhere the variation from the normal supply of rain is unimportant. On the 30th of April, at Fort Gibson, Indian Territory, occurred the very remarkable condensation of 4.54 inches of rain in four hours.

The number of days upon which rain or snow fell during the month, in the several districts, averages as follows: New England, 9; the Middle States, 13; South Atlantic States, 9; Eastern Gulf States, 7; Western Gulf States, 8; Lower Lake region, 13; Upper Lake region, 12; Ohio valley and Tennessee, 11; Upper Mississippi valley, 9; Lower Missouri valley, 12; Minnesota, 10 days.

## HUMIDITY.

The average relative humidity for the different districts is as follows: For New England, 65 per cent.; Middle Atlantic States, 70 per cent.; South Atlantic States, 66; Eastern Gulf States, 69; Western Gulf States, 66; Lower Lakes, 67; Upper Lakes, 68; Ohio valley and Tennessee, 56; Upper Mississippi valley, 59; Lower Missouri valley, 60; Minnesota, 67.

## WINDS.

The average direction of the wind at each station is indicated by the arrows on Chart II, the arrows being supposed to fly with the wind. The following figures show some of the highest and lowest totals of wind-movement for the whole month at the points named: Cheyenne, 11,112; Galveston, 10,008; Indianola, 10,565; Cape Hatteras, 10,992; Long Branch, 11,449; Peck's Beach, 10,916; Sandy Hook, 11,692; Nashville, 3,856; Mobile, 3,505; Lynchburg, 3,484; Augusta, 3,560. The prevailing winds were from northwest to southwest.

## VERIFICATION OF PREDICTIONS AND CAUTIONARY SIGNALS.

A critical investigation shows—

(1) The average percentage of verification, for all the weather predictions issued telegraphically, is 87.2. The average percentage of omissions to predict is 0.6.

(2) The number of Cautionary Signals displayed during April, at all sea-ports and lake stations of the Signal office in the United States, was 146. Of this number 24 were not justified by the result; 122 were justified. The storm-warnings were, therefore, justified to the extent of 83 per cent.



## NAVIGATION.

The usual tabular exhibit of river-changes for the month will be found on chart No. III. The following data show the condition of navigation on the rivers, the lakes and along the Atlantic sea-coasts:

(1) *Ice in the North Atlantic.*—European steamships arriving at American ports reported very large quantities of ice in the North Atlantic during the first part of April. On April 1st the steamer China passed a very large iceberg; also a very large ice-floe in latitude  $46^{\circ} 53' N.$ , longitude  $41^{\circ} 25' W.$  The next day and the day following, the steamer City of New York had similar experience in latitude  $41^{\circ} 53' N.$ , longitude  $53^{\circ} 09' W.$  On April 2d, the steamship Italy passed several icebergs in latitude  $42^{\circ} 10' N.$ , longitude  $50^{\circ} 04' W.$  The day after, the steamship Ethiopia, in latitude  $42^{\circ} 38' N.$ , longitude  $49^{\circ} 31' W.$ , encountered a large iceberg, and the steamship Switzerland numerous icebergs and field-ice, extending westward to longitude  $50^{\circ} 31'$ . April 8th, the steamship Baltic, in latitude  $42^{\circ} 02' N.$ , longitude  $42^{\circ} 12' W.$ , met five large icebergs. As late as April 10, Penobscot bay was still solidly bridged with ice, averaging fifteen inches thick, and on that date the steamship Schiller, in latitude  $42^{\circ} N.$ , longitude  $50^{\circ} W.$ , saw an immense iceberg. April 13th, the steamship Weser, in the same locality, passed a great quantity of drift-ice and a large iceberg. April 15th, the steamship W. A. Scholten, in latitude  $44^{\circ} 07' N.$ , longitude  $49^{\circ} 12'$ , was surrounded by heavy fields of ice, stretching as far as the eye could reach, many cakes twenty feet thick, with surfaces of five thousand square feet, while icebergs, eighty feet high and six hundred feet long, surrounded the steamer, which escaped with difficulty. Still later, on the 26th, the steamship Severn, in latitude  $47^{\circ} 36' N.$ , longitude  $69^{\circ} 28'$ , was embayed and fast-stuck in the midst of large quantities of ice, and, after escaping in a damaged condition, ran through the ice-fields one hundred and eighty-five miles south.

(2) *The Reopening of River and Lake Navigation.*—As late as April 5th, large quantities of ice came down the North river and obstructed New York harbor. Ice broke up in Seneca lake, N. Y., and navigation resumed on the 5th. At Mount Desert, Me., the lower harbor opened on the 26th. At Bangor, Me., river open on the 16th. Grand Traverse bay, Mich., cleared on the 14th. The Red river of the North on the 19th, and first boat arrived on the 22d. Chatauqua lake, N. Y., cleared on the 13th. Navigation partly opened on Lake Ontario about the middle of April. At Muscatine, Iowa, first boat on the 5th; at Fort Madison, Iowa, first boat on the 4th. At Albany, N. Y., ice moved on the 1st and 2d; Connecticut river thawed at Springfield, Mass., on the 2d; on the 1st ice broke above West Point, N. Y.; on the 8th the Hudson river was open from New York to Albany. At Erie, Pa., Lake Erie was open on the 17th; on the 12th navigation opened from Detroit to Cleveland; the St. Paul ice-gorge broke on the 4th and navigation opened on the 25th. Navigation was resumed at Buffalo on the 2d; at Chicago ice broke on the 1st, and at Grand Haven navigation was free on the 3d.

## ATMOSPHERIC ELECTRICITY.

(1) *Thunder and Lightning.*—The following data exhibit the prevalency of thunder and lightning: On the 1st in Ala., La., and N. Y.; on the 3d in Ill., Ind., and Maine; on the 6th in Iowa, Kan., and Neb.; on the 7th in Iowa, Kan., and Texas; on the 8th in Ala., Ill., La., Miss., and Tenn.; on the 9th in Ala., La., and S. C.; on the 10th in Ala., Ga., La., Penn., S. C., and Tenn.; on the 11th in Ala., Ga., Kan., Ohio, Penn., and S. C.; on the 16th in Ga., Ill., Me., Mass., N. H., and R. I.; on the 19th in Ill., Ind., Iowa, Kan., Mo., N. Y., Ohio, Tenn., and Texas; elsewhere on the 20th, 27th and 29th.

(2.) *Auroras* have been observed as follows: On the 6th in Ill., Me., and N. Y.; on the 7th in Conn., Ill., Me., Mass., Mich., N. H., N. J., N. Y. and Vt.; on the 8th in Me., N. H., and Vt.; on the 9th in Vt. and Iowa; on the 26th in Conn., Me., Mass., Mich., N. H., and N. Y.

### OPTICAL PHENOMENA.

(1) *Solar halos* were reported as follows: From New Hampshire, New York and Pennsylvania on the 1st; Indiana and Ohio, on the 2d; Iowa on the 4th, Tennessee on the 5th; and from many other points on the 14th, 22d, 26th, 28th and 29th.

(2) *Lunar halos* were reported as follows: From Maryland, New Jersey, New York, Pennsylvania and Ohio, on the 10th; Maine, New Hampshire and Michigan, on the 13th; Illinois, Indiana, Iowa, Missouri, New York, Pennsylvania and North Carolina, on the 14th; and from other points on the 16th, 18th and 20th.

(3) *Mirage*.—Ellinwood, Kan., on the 14th, 17th, 22d and 27th; Traverse City, Mich., 8th and 28th.

### MISCELLANEOUS.

(1) *Injury to vegetation*. In addition to the remarks already made on this topic, under the head of ATMOSPHERIC TEMPERATURE, (2.) the following notes are important: At Troy, Alabama, the field and garden crops have suffered. At Wilsonville, Alabama, on the 19th, the frost was damaging to fruits and vegetables. At Gainesville, Georgia, fruit was largely killed. At Wyanet, Illinois, plants froze under cover from the 15th to the 18th. At Vevay, Indiana, frost on 17th was killing. At Rising Sun, Indiana, on the 16th, 17th and 18th, the same case occurred. At Winchester and Pine Grove, Kentucky, fruits and vegetables were generally damaged. At Northport, Michigan, the winter-cold was very damaging to all fruits; grapes, however, wintered better than usual. At Asheville, North Carolina, on the 17th and 18th, peach and cherry crops were killed and apples injured; so also at Mount Pleasant, North Carolina. At Bellefontaine, and other points in Ohio, fruits of all kinds were injured. At Tarentum, and other points in Pennsylvania, fruit and wheat were injured. Beans were destroyed on 17th and 18th, at Hacienda Saludar, South Carolina. In Tennessee and Virginia, fruit and vegetables were injured and trees and plants frozen.

(2.) *Meteors* were reported in Ill. on the 2d and 3d; Ga. and S. C. on the 4th; Md. on the 5th, 7th and 14th; Miss. and N. J. on the 6th; Ala. on the 15th and 17th; Iowa on the 18th; Kan. on the 20th and 21st; N. Y. on the 23d; Mass. on the 27th; R. I. on the 30th.

(3.) *Polar Bands* on the 19th at New Haven; on the 21st and 28th at Buffalo; on the 22d at Alpena; on the 19th, 21st and 28th at Iowa City.

(4.) *Zodiacal Light* on the 1st at Corning, Mo.; on the 4th at Linden, Ill.; on the 6th at Point Pleasant, La.; on the 25th at Wooster, Ohio.

(5.) *Water and Barometer Oscillations*.—At Marquette, on Lake Michigan, the water and the barometer oscillated together twenty-five times, and in a contrary manner sixty-five times.

(6.) *Zoological*.—*Wild Geese* were seen going S. E. at Madison Barracks, N. Y., on the 1st; going N. at New London on the 1st, 2d and 11th; going S. at Detroit on the 21st; going N. at Dubuque on the 1st, 17th, 22d and 26th; at St. Paul on the 2d and 8th; at Atlantic City on the 1st, 2d and 8th; at Wood's Hole on the 8th, and harbor full of geese on the 14th. *Blue Birds* arrived at Standish, Me., on the 2d; at Amherst, Mass., 1st; on the 2d, Contoocookville, N. H.; Auburn, N. H., 1st. *Wild Pigeons* arrived, Independence, Iowa, on the 3d; going N. at Cresco, Iowa, on the 2d; on the 11th, at Auburn, N. H. *Robins*, on the 6th, at Springfield, Mass.; at Cornish and Standish, Me., on the 21. *Swallows*, on the 29th, at Morgantown, W. Va.; at Ellinwood, Kan., on the 2d. *Buffalo Gnats* first appear at Memphis on the 22d; on the 29th, very destructive to stock. *Grasshoppers* reported on the 20th from all parts of Colorado Territory; at Leroy, Kan., young grasshoppers, very numerous and destructive, were actively attacking vegetation.

PUBLISHED BY ORDER OF THE HON. WM. W. BELKNAP, SECRETARY OF WAR.

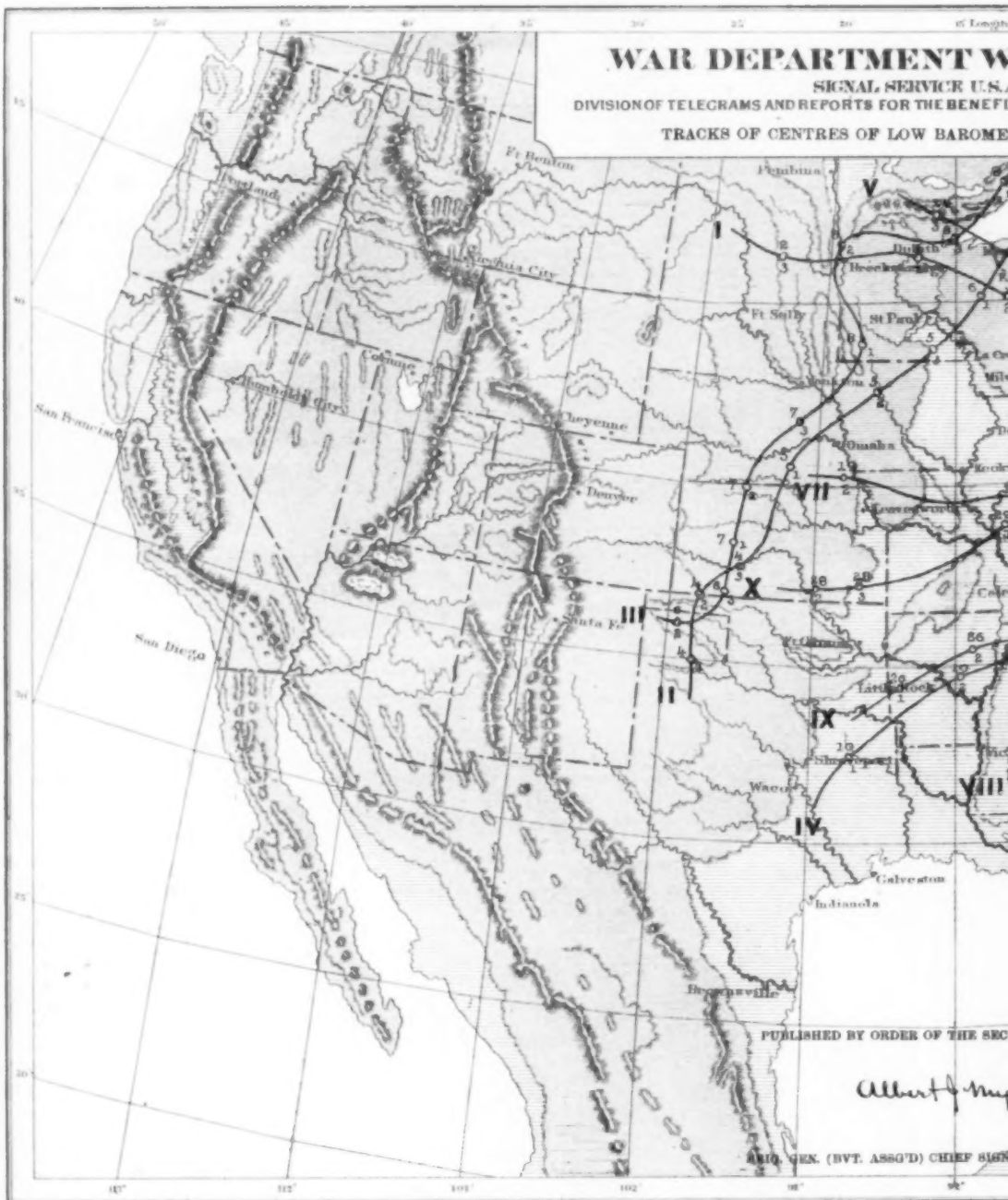
Albert J. Myer

Brig. Gen. (Bvt. Assg<sup>t</sup>.) Chief Signal Officer, U. S. A.

Copy furnished for







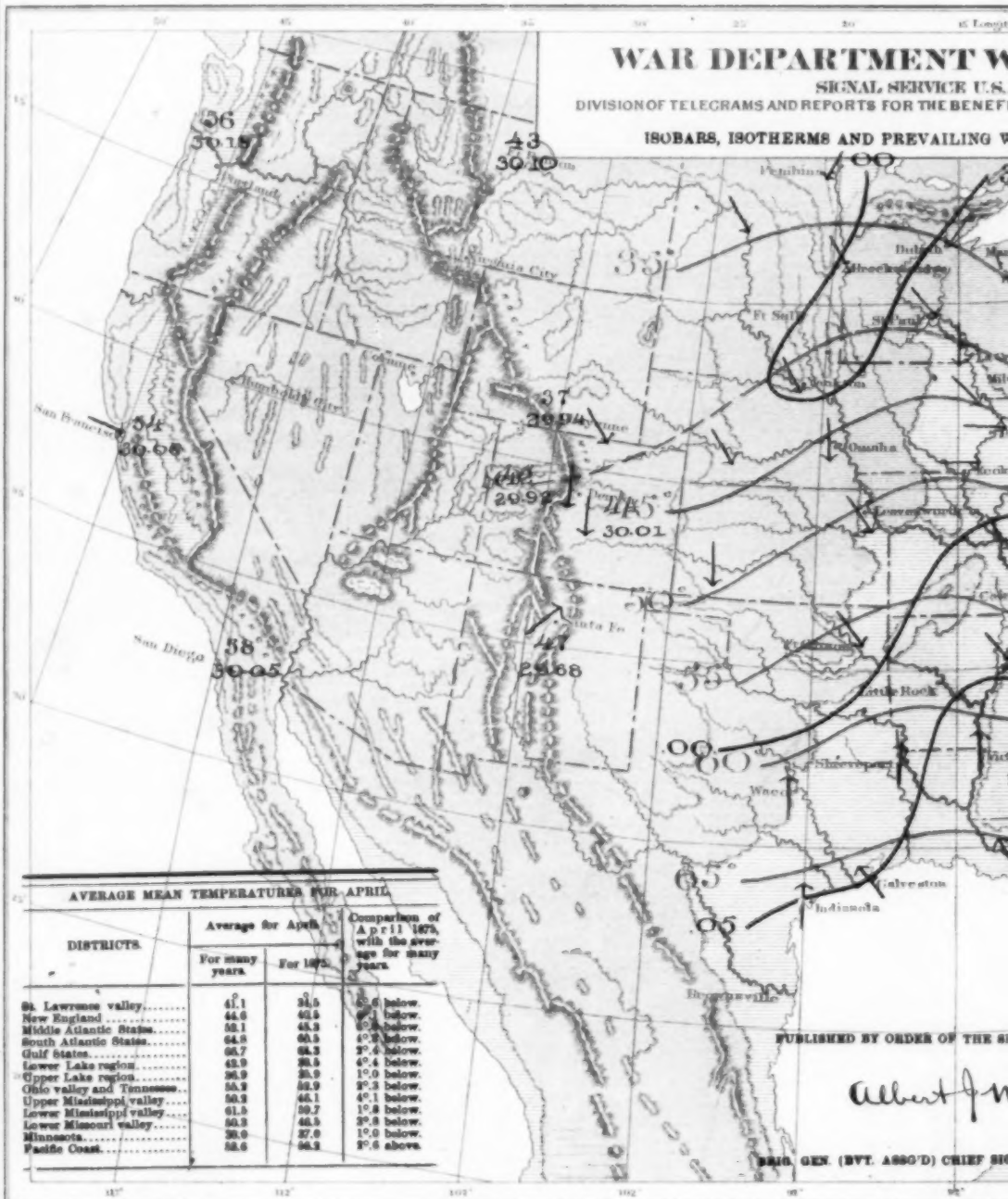
Longitude from Washington 2° West to East 20°  
**WEATHER MAP.**  
 U.S. ARMY,  
 IN BENEFIT OF COMMERCE AND AGRICULTURE.  
 BAROMETER FOR APRIL, 1875.





SIGNAL SERVICE U.S.  
DIVISION OF TELEGRAMS AND REPORTS FOR THE BENEFIT

ISOBARS, ISOTHERMS AND PREVAILING W

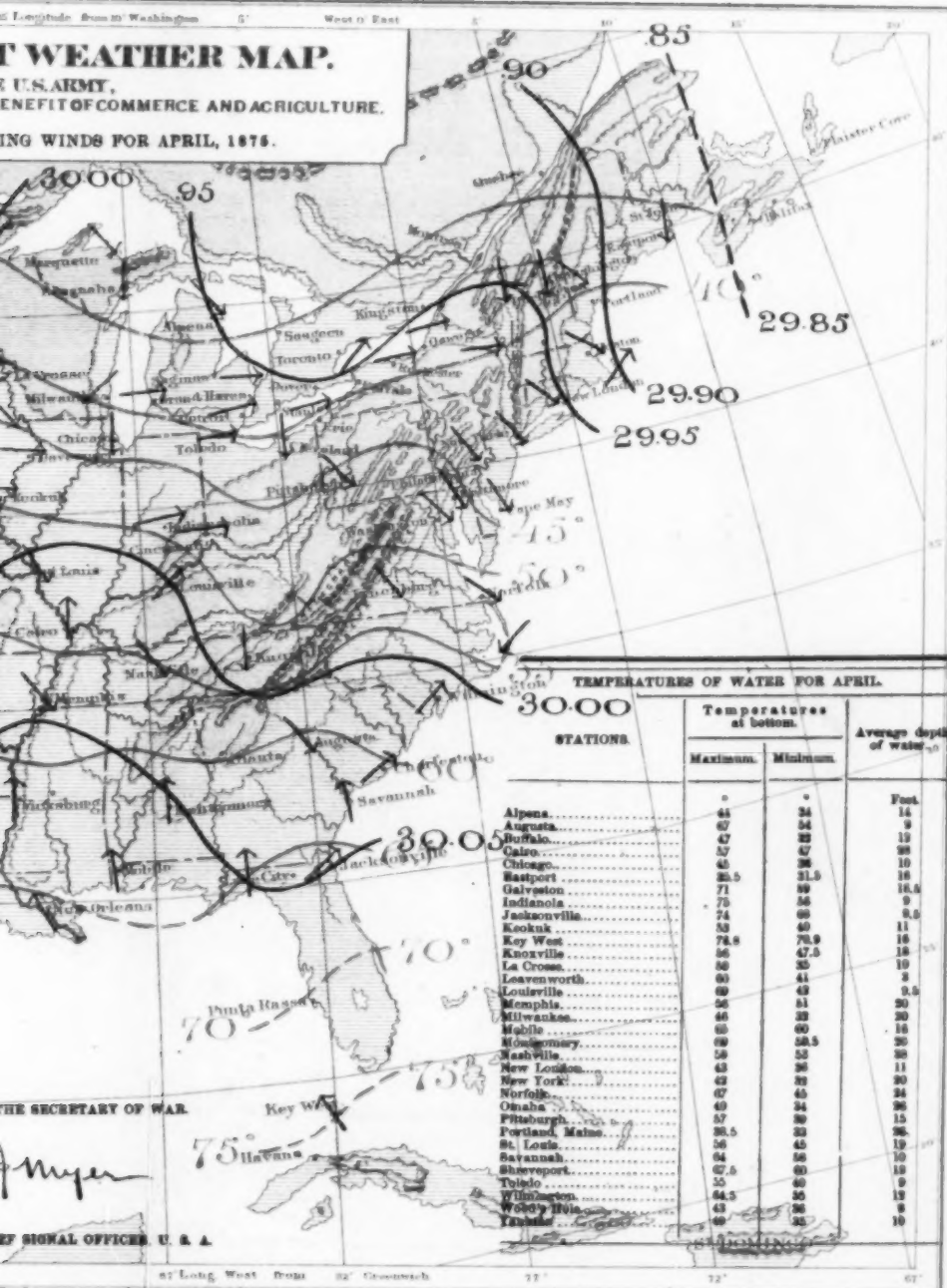


PUBLISHED BY ORDER OF THE S

Albert J. M.

BRIG. GEN. (DVT. ASSG'D) CHIEF SIG

Longitude from Washington 5° West to East 20°  
**WEATHER MAP.**  
 U.S. ARMY.  
 BENEFIT OF COMMERCE AND AGRICULTURE.  
 WINDS FOR APRIL, 1876.



# WAR DEPARTMENT SIGNAL SERVICE DIVISION OF TELEGRAMS AND REPORTS FOR THE

PRECIPITATION CHART

